

55th and 65th meridians 7 less than the average; and west of the 65th meridian 2 less than the average. The fog in the regions referred to and the dense fogs noted at stations of the

Weather Bureau on the middle Atlantic and New England coasts generally attended the approach or passage of general storms.

### TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for March, 1892, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over the south part of the Florida Peninsula and in the lower Rio Grande and lower Colorado valleys, where it was above 65; it was above 50 in middle and southern South Carolina and Georgia, over the middle and south parts of the Gulf States, in southern Arkansas, a greater part of Texas, in southern and western Arizona, and in California, except in the extreme northern part of the state and at mountain stations. The mean temperature was lowest in Saskatchewan and on the extreme north shore of Lake Superior, where it was below 15; it was below 25 along the northern border of the country east of the 105th meridian, and at mountain stations in Colorado; and was below 30 north of a line traced from the middle New England coast over northern Pennsylvania, thence to central Iowa, and thence to southern Alberta.

#### DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for March for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for March, 1892; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for March during the period of observation and the years of occurrence:

State and station.	(1) Normal for the month of March.	(2) Length of record.	(3) Mean for March, 1892.	(4) Departure from normal.	(5) Extreme monthly mean for March.			
					Highest.	Year.	Lowest.	Year.
<i>Arizona.</i>	°	Years	°	°	°		°	
Fort Apache.....	46.1	20	45.8	- 0.3	53.8	1879	41.3	1875
Fort Mohave.....	53.7	21	64.6	+ 0.9	70.5	1879	58.0	1880
Whipple Barracks.....	45.6	20	44.8	- 0.8	53.8	1879	38.7	1886
<i>Arkansas.</i>								
Lead Hill.....	48.0	10	.....	.....	55.4	1882	45.0	1891
<i>California.</i>								
Fort Bidwell.....	40.3	21	41.6	+ 1.3	49.3	1883	31.2	1874
Riverside.....	56.6	10	56.6	0.0	61.6	1885	52.5	1890
<i>Colorado.</i>								
Las Animas.....	40.5	10	34.8	- 5.7	45.4	1887	33.2	1891
<i>Florida.</i>								
Merritts Island.....	66.1	10	65.0	- 1.1	71.4	1882	61.6	1889
<i>Georgia.</i>								
Forsyth.....	56.6	18	55.7	- 0.9	61.7	1880, 1882	51.4	1885
<i>Idaho.</i>								
Boise Barracks.....	43.2	18	43.4	+ 0.2	49.1	1889	36.8	1882
Fort Sherman.....	38.6	9	.....	.....	43.6	1889	33.2	1882
<i>Illinois.</i>								
Centralia.....	41.1	12	36.0	- 5.1	46.0	1889	35.0	1891
<i>Indiana.</i>								
La Fayette.....	35.8	12	36.2	+ 0.4	41.3	1882	29.6	1885
<i>Indian Territory.</i>								
Fort Supply.....	44.9	13	41.6	- 3.3	52.6	1882	37.4	1876
<i>Iowa.</i>								
Cresco.....	25.1	20	27.8	+ 2.7	42.3	1878	19.6	1888

#### Deviations from normal temperature—Continued.

State and station.	(1) Normal for the month of March.	(2) Length of record.	(3) Mean for March, 1892.	(4) Departure from normal.	(5) Extreme monthly mean for March.			
					Highest.	Year.	Lowest.	Year.
<i>Kansas.</i>	°	Years	°	°	°		°	
Eureka Ranch.....	40.8	9	35.5	- 5.3	46.0	1889	34.1	1891
Independence.....	44.6	20	41.9	- 2.7	54.1	1878	36.7	1876
Salina.....	40.2	9	38.2	- 2.0	45.0	1889	34.3	1891
<i>Louisiana.</i>								
Grand Coteau.....	61.6	9	57.6	- 4.0	66.2	1884	57.6	1892
<i>Maine.</i>								
Orono.....	27.5	22	28.1	+ 0.6	34.6	1871	19.1	1885
<i>Maryland.</i>								
Cumberland.....	37.0	33	35.7	- 1.3	46.0	1878	30.0	1875
<i>Michigan.</i>								
Kalamazoo.....	31.1	16	32.6	+ 1.5	42.2	1878	22.5	1885
<i>Missouri.</i>								
Sedalia.....	41.7	9	38.3	- 3.4	48.1	1889	36.1	1891
<i>Montana.</i>								
Fort Custer.....	32.7	11	.....	.....	40.8	1889	23.0	1888
<i>Nebraska.</i>								
Fort Robinson.....	34.6	8	31.3	- 3.3	43.0	1889	24.8	1891
Genoa (near).....	32.2	16	32.3	+ 0.1	43.6	1878	23.8	1876
<i>Nevada.</i>								
Browns.....	46.7	20	48.9	+ 2.2	52.8	1879	37.7	1880
Carson City.....	41.4	15	41.6	+ 0.2	50.1	1877	33.5	1880
<i>New Hampshire.</i>								
Hanover.....	27.8	58	28.2	+ 0.4	35.5	1871	19.0	1872, 1875
<i>New Mexico.</i>								
Deming.....	56.5	10	53.4	- 3.1	61.7	1888	51.5	1891
Fort Wingate.....	42.1	21	41.2	- 0.9	51.1	1879	34.3	1886
<i>New York.</i>								
Cooperstown.....	27.4	38	25.0	- 2.4	37.2	1871	18.3	1885
Plattsburgh Barracks.....	26.9	21	23.2	- 3.7	35.0	1871	16.7	1885
<i>North Carolina.</i>								
Lenoir.....	45.4	18	45.2	- 0.2	51.6	1878	35.0	1877
<i>Oklahoma.</i>								
Fort Reno.....	48.2	9	.....	.....	52.8	1887	45.5	1891
Fort Sill.....	51.3	20	47.3	- 4.0	59.3	1879	42.0	1876
<i>Oregon.</i>								
Bandon.....	46.8	8	46.6	- 0.2	50.8	1889	41.5	1886
Eola.....	45.2	22	49.9	+ 4.7	54.2	1884	35.8	1880
<i>Pennsylvania.</i>								
Dyberry.....	28.7	27	26.3	- 2.4	36.9	1878	19.5	1885
Grampian Hills.....	30.5	27	27.0	- 2.9	40.4	1878	20.1	1885
Wellsborough.....	31.0	12	25.2	- 5.8	37.6	1882	22.4	1885
<i>South Carolina.</i>								
Statesburg.....	52.8	11	50.8	- 2.0	59.0	1882	48.3	1885
<i>South Dakota.</i>								
Fort Sully.....	29.1	21	30.8	+ 1.7	44.5	1878	15.9	1876
<i>Texas.</i>								
Austin.....	60.6	20	55.4	- 5.2	66.8	1879	53.0	1872
Silver Falls.....	51.9	6	48.3	- 3.6	56.7	1887	47.7	1891
<i>Utah.</i>								
Terrace.....	42.1	20	45.7	+ 3.6	51.3	1889	28.3	1875
<i>Vermont.</i>								
Stratford.....	26.1	19	24.1	- 2.0	33.8	1878	17.2	1883
<i>Virginia.</i>								
Dale Enterprise.....	41.8	12	37.5	- 4.3	47.1	1880	32.1	1885
<i>Washington.</i>								
Fort Townsend.....	44.5	19	45.6	+ 1.1	50.7	1885	38.7	1880
<i>West Virginia.</i>								
Parkersburg.....	41.7	11	.....	.....	52.8	1882	36.7	1890
<i>Wisconsin.</i>								
Embarrass.....	26.0	20	25.9	- 0.1	42.3	1878	19.2	1872
Madison.....	29.9	27	27.4	- 2.5	37.1	1889	23.2	1888
<i>Wyoming.</i>								
Fort Washakie.....	33.1	9	36.0	+ 2.9	41.0	1887	26.8	1891

#### DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was above the normal in middle and eastern districts north of the 45th parallel, over the middle and northern plateau regions, on the northeast slope of the Rocky Mountains, and along the Pacific coast north of the 40th parallel. The greatest departure above the normal temperature occurred in the Red River of the North Valley, where it was 4 to 6, and the mean was 2, or more, above the normal from the northern part of the Lake region to the north Pacific coast. In districts east of the Rocky Mountains and south of the 45th parallel, over the southern plateau region, and along the middle and south Pacific coasts the mean temperature was below the normal, the most marked departure being noted in

southern Kansas, where it was more than 6. In an area extending from the middle Ohio valley to southeastern Pennsylvania, at Atlanta, Ga., and from Kansas and Missouri over the west Gulf states and Mississippi the departure below the normal was more than 4.

#### YEARS OF HIGHEST MEAN TEMPERATURE FOR MARCH.

The highest mean temperature for March occurred in Washington and Oregon, along the immediate middle Pacific coast, and in the extreme northwest in 1889; over northern and western Florida and southern Georgia in 1880; from the east part of the middle plateau region over the west Gulf states in 1879; from the middle-eastern slope of the Rocky Mountains over the Lake region to the Atlantic coast north of Georgia in 1878, except in Pennsylvania, where the highest mean was noted in 1871.

#### YEARS OF LOWEST MEAN TEMPERATURE FOR MARCH.

At Auburn, Ala., Vicksburg, Miss., Grand Coteau and Shreveport, La., and Galveston and Brownsville, Tex., the current month was the coolest March on record. The lowest mean temperature for March occurred from the middle-eastern slope of the Rocky Mountains and the lower Missouri valley over Texas in 1891; from the northeast slope of the Rocky Mountains to the extreme upper Mississippi valley in 1888; from the east Gulf coast over the central and eastern Lake region and New England in 1885, except at stations on the immediate New England and south Atlantic coasts; along the Pacific coast in 1880; in the middle Mississippi valley and at points on the New York, New England, and south Atlantic coasts in 1872.

#### MAXIMUM TEMPERATURE.

At Olympia, Wash., and Red Bluff and San Francisco, Cal., the maximum temperature was 1 higher than previously reported for March.

The highest temperature reported at a regular station of the Weather Bureau was 92, at Yuma, Ariz., on the 11th. Reports of voluntary observers show maximum temperature above 100 in the Colorado Desert, California. The maximum temperature was above 80 over the Florida Peninsula, southern Georgia, southeastern Alabama, along the Mississippi River from Vicksburg, Miss., to Memphis, Tenn., in Arkansas, northern Louisiana, Indian and Oklahoma territories, Texas, over the middle and west parts of the southern plateau region, at Los Angeles, Cal., and in the Sacramento Valley, Cal. Along the middle Gulf and east Texas coasts the maximum readings were below 80. The lowest maximum temperature, 50, or below, was noted from eastern Upper Michigan and northern Lower Michigan over northern New England, on the southeast New England coast, and at Tatoosh Island, Wash.

#### MINIMUM TEMPERATURE.

At Valentine, Nebr., 7 years' record, the minimum temperature for the current month, -20, was 5 lower, and at Shreveport, La., Vicksburg, Miss., Atlanta, Ga., and Key West, Fla., the minimum was as low as previously noted for March.

The lowest temperature reported at a regular station of the Weather Bureau was -20, at Valentine, Nebr., on the 17th. The minimum values were below 0 (zero) in the interior of Maine, in northern New Hampshire, northern Vermont, north-eastern New York, and north of a line traced from central Lower Michigan to west-central Iowa, thence to extreme north-western Texas and northeastern New Mexico, and thence irregularly north-northwest to north-central Montana. Zero temperature was also reported at points in northeastern Arizona and eastern Nevada.

#### LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line traced over the Florida Peninsula south of the 30th parallel, over extreme southern Louisiana, and over Galveston and Brownsville, Tex. The western limit of freezing weather is shown by a line traced from southeastern Arizona over southern Nevada, thence along the Sierra Nevada Mountain range to Oregon, thence eastward over the valley of the Columbia River, and thence to extreme northwestern Washington.

#### RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly ranges of temperature were noted at stations on the middle-eastern slope of the Rocky Mountains, in northern Nebraska, and western South Dakota, where they exceeded 80. From that region they decreased eastward to less than 40 on the south New England and Carolina coasts, southward to less than 30 at Key West, Fla., and to less than 40 on the middle Gulf coast, and westward to less than 30 on the south and north California and Washington coasts.

#### PERIODS OF HIGH TEMPERATURE.

The warmest weather of the month prevailed along the Pacific coast from the 7th to 10th, with maximum readings 70 to 80, except along the immediate coast. During the 11th and 12th the warm wave extended over the plateau region and the middle-eastern and northeast slopes of the Rocky Mountains, with a rise in temperature of 30 to 40 in the Northwest, and reached the middle and south Atlantic states on the 12th. From the 24th to the 31st a succession of moderate warm waves caused the highest temperature of the month in districts east of the Rocky Mountains.

#### PERIODS OF LOW TEMPERATURE.

A severe cold wave advanced from the northeast slope of the Rocky Mountains to the Atlantic and Gulf States from the 8th to the 10th. Ice formed and fruit and vegetables were injured in the interior of the Gulf and south Atlantic states. On the 11th a cold wave appeared on the northeast slope of the Rocky Mountains and overspread the eastern and southern districts by the 14th; re-enforced by a cold wave which appeared in the Northwest on the 14th, this cold wave increased in intensity over the Gulf and south Atlantic states from the 15th to the 18th, during which latter-named date and the early morning of the 19th it extended over the Florida Peninsula. This cold wave carried the line of freezing weather to the mouth of the Rio Grande River, to the immediate Gulf coast, and over a large part of northern Florida, damaging fruit and vegetation. On the 27th the temperature fell 20, or more, over the west part of the middle plateau region. During the 28th the cold wave occupied an area extending from Idaho to Arizona, and on the 29th reached the middle Missouri valley. On the 31st the temperature fell 20 to 30 in the Rocky Mountain regions.

#### FROST.

Frost injurious to vegetation was reported as follows: On the 11th heavy frost occurred at Palestine, Tex., and ice one-eighth inch in thickness formed on still water; considerable damage was caused to garden vegetables. In Arkansas fruit was injured by heavy frost from the 12th to 19th. Heavy frost and ice formed at Savannah, Ga., on the 12th. Gardeners and farmers were notified on the 11th that frost was anticipated and timely precautions prevented serious injury to early vegetables and crops. A report from Llano, Tex., stated that frost and cold from the 16th to 19th injured fruit. On the 17th light frost injured early vegetation at San Antonio, Tex. Heavy frost was reported in northern and western Florida on the 19th and 20th. In several of the western counties the pear and peach crops were damaged, and in some localities almost entirely destroyed. In many places the young shoots of orange trees were cut, but no serious damage was caused to the orange crop. In the northern and central parts of the peninsula vegetables and strawberries were damaged. The frost of the 18th caused damage to crops, vegetables, and fruit throughout Texas. The frost of the 18th and 19th was destructive to fruits and vegetables in Louisiana, Mississippi, and the east Gulf and south Atlantic states. In some counties of West Virginia wheat was slightly damaged by frost on the 23d. On the 27th frost caused slight damage to crops in Washington. On the 28th early vegetation in the bottom lands about Los Angeles, Cal., was injured by frost. On the 29th frost injured tender vegetation and vines in Arizona. Frost damaged fruit in Placer, Nevada, and Humboldt counties, Cal., on the 31st.